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GRDA
Grand River Dam Authority

September 5, 2023

VIA ELECTRONIC FILING

Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NW
Washington, DC 20426

Re: Pensacola Hydroelectric Project, FERC Project No. 1494-461
Response to Comments on Relicensing Study Plan, Including Requested Contaminated Sediment Transport Study

Dear Secretary Bose:

In accordance with the June 27, 2023, process plan and schedule issued by Federal Energy Regulatory Commission (Commission or FERC) staff for final resolution of the Integrated Licensing Process (ILP) Study Plan for the relicensing of the Pensacola Hydroelectric Project No. 1494 (Project),[1] Grand River Dam Authority (GRDA) respectfully submits this response to comments filed by the Miami Tribe of Oklahoma (Miami Tribe),[2] City of Miami, Oklahoma (City),[3] and the Local Environmental Action Demanded Agency, Inc. (LEAD)[4] (collectively, Commenters).

For the reasons stated in Section I below, the Commission should: (1) reject the Commenters' requested Contaminated Sediment Transport Study; (2) determine

[1] Revised Process Plan, Project No. 1494-461, Accession No. 20230627-3009 (issued June 27, 2023).

[2] Comments of the Miami Tribe of Oklahoma on GRDA's Response for Contaminated Sediment Transport Study, Project No. 1494-461, Accession No. 20230816-5057 (filed Aug. 16, 2023) [hereinafter, Tribes' Comments]. According to the Miami Tribe, the Ottawa Tribe of Oklahoma, the Eastern Shawnee Tribe of Oklahoma, and the Seneca Cayuga Nation join in the comments filed by the Miami Tribe. *Id.* at 1.

[3] Comments on GRDA's Additional Information and Analyses Requested by Commission Staff and Response to Request for Contaminated Sediment Transport Study, Project No. 1494-461, Accession No. 20230814-5198 (filed Aug. 14, 2023) [hereinafter, Miami Comments].

[4] LEAD Agency Comments in Response to GRDA's Additional Information and Analyses and Response to Requests for Contaminated Sediment Studies, Project No. 1494-438, Accession No. 20230814-5175 (filed Aug. 14, 2023) [hereinafter, LEAD Comments].

that the Commission-approved ILP Study Plan is now fully complete; and (3) move forward with the relicensing of the Project. As an alternative proposal, if Commission staff would find it helpful as part of its cumulative effects analysis under the National Environmental Policy Act (NEPA) to obtain additional information on contaminated sediment transport, GRDA would propose to prepare a desktop study on this issue, based on a review of existing literature, studies, and information. A proposed study plan for this desktop study appears in Appendix B, and the proposed schedule for completing this study appears in Section II.

I. The Commission-Approved ILP Study Plan Is Now Complete, with No Further Changes or Additions Warranted.

On March 14, 2023, Commission staff issued their Determination on Requests for Study Modifications and New Studies (Determination), in which they concluded that the two remaining FERC-approved study plans at issue in the ILP, the Hydrologic and Hydraulic (H&H) Modeling Study and Sedimentation Study, "are nearly complete," but recommended several minor refinements to these studies based on comments submitted by the City.[5] In its Determination, Commission staff also deferred their decision on whether to recommend the Contaminated Sediment Transport Study proposed by the City and other relicensing participants until staff have an opportunity to review GRDA's additional work on the H&H Modeling Study and Sedimentation Study, and to determine whether Project operations "affect flooding, peak flows, and sediment transport in the project headwaters."[6]

On July 24, 2023, GRDA filed the additional modeling work recommended by Commission staff in their Determination, together with a report detailing its reasons why the proposed Contaminated Sediment Transport Study is unwarranted.[7]

In their response comments, Commenters raise no concerns with GRDA's refinements to the H&H Modeling Study and Sedimentation Study completed in accordance with Commission staff's Determination, instead focusing their comments entirely on the proposed Contaminated Sediment Transport Study. But in their zeal to convince Commission staff to recommend that GRDA conduct their proposed Contaminated Sediment Transport Study, Commenters tellingly present no new information supporting this study request. Rather, they simply re-package information previously filed on the record—information that Commission staff obviously did not find persuasive, given staff's decision to defer consideration of the matter until further information had been developed. Commenters also attempt to dangerously misconstrue GRDA's latest modeling work as evidence of Project effects—when, in reality, Commission staff

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[5] Determination on Requests for Study Modifications and New Studies for the Pensacola Hydroelectric Project at C-3, Project No. 1494-438, Accession No. 20230314-3035 (issued Mar. 14, 2023) [hereinafter, 2023 SMD].

[6] *Id.*

[7] Additional Information and Analyses Requested by Commission Staff and Response to Request for Contaminated Sediment Transport Study, Project No. 1494-438, Accession No. 20230724-5120 (filed Jul. 24, 2023) [hereinafter, July 24 Filing].

recommended this latest round of modeling scenarios *only* to test "the 'extreme' boundaries of each operational alternative."[8] Quite simply, Commenters present no evidence—and there is none—that the U.S. Army Corps of Engineers (Corps), during a significant flooding event, has ignored its statutory flood control responsibilities by failing to take action until flood waters have reached the upstream face of Pensacola Dam. Yet, the City and other Commenters insult the intelligence of Commission staff by insisting that these intentionally fictious, hypothetical scenarios—conducted at the request of Commission staff *only* to test the outer limits of the H&H model—as demonstrated fact.

In reality, after many years of intensive study and analysis, which has been subjected to intense peer review by Commission staff and the City's own consulting team, the record in this ILP demonstrates conclusively that GRDA's Project operations do not cause flooding in the Project's headwaters along the Spring, Neosho, and Elk Rivers or Tar Creek. This conclusion is supported not only by the H&H Modeling Study, but the historical record of this basin as well. As Commission staff is aware, the report entitled *A History of Flooding, Flood Control, and Hydropower on the Neosho (Grand) River* (*History of Flooding*)—which none of the Commenters even mention—demonstrates that the Neosho River basin, including the Project area, has experienced frequent, widespread, and devasting flooding, dating back to long before the Project was constructed.[9] And although the *History of Flooding* corroborates the results of the H&H Modeling Study, the City and other Commenters would have Commission staff completely ignore this compelling evidence, and instead accept their preconceived and false version of a basin that experienced little to no flooding before the Project was developed over 80 years ago.

Even worse for the City and other Commenters, Commission staff has indicated that its decision on whether to require the proposed Contaminated Sediment Transport Study will be based *not* on a finding of whether the Project causes any degree of increase in water surface elevations in the Project's headwaters—but rather whether Project operation "contributes to sediment deposition *in the overbank areas* of the Grand Lake tributaries."[10] While the City continues to obfuscate this distinction by complaining (inaccurately) about GRDA's use of terms such as "natural flooding" and "immaterial impact,"[11] not even the City is willing to argue that effects of Project operations are so extensive that they contribute to overbank flooding.

And beyond this principal issue of overbank flooding informing Commission staff's determination on the proposed Contaminated Sediment Transport Study, Commenters largely ignore the other reasons identified by GRDA in its July 24 filing demonstrating that the proposed Contaminated

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8 2023 SMD, Accession No. 20230314-3035, at B-8.

9 *See* Final License Application for the Pensacola Project No. 1494-438, Accession No. 20230530-5192, at Appendix E-10 (filed May 30, 2023) [hereinafter, FLA].

10 Study Plan Determination for the Pensacola Hydroelectric Project at B-38, Project No. 1494-438, Accession No. 20181108-3052 (issued Nov. 8, 2018) (emphasis added).

11 Miami Comments, Accession No. 20230814-5198, at 11.

Sediment Transport Study is wholly inappropriate. Commenters' superficial responses to these other important factors fail to rectify the significant problems with this proposed study.

For all these reasons, Commission staff—relying on the actual scientific record developed in this ILP, and not Commenters' mischaracterization and misapplication of that record—should conclude that the requested Contaminated Sediment Transport Study is unwarranted and determine that the entire ILP Study Plan is now fulfilled.

A. The H&H Modeling Study and Sedimentation Study Are Now Complete.

As noted above, none of the Commenters raise any concerns with the additional refinements to the H&H Modeling Study and Sedimentation Study submitted by GRDA in its July 24 filing. Accordingly, Commission staff should accept these refinements and determine that these studies are now complete.

B. The Proposed Contaminated Sediment Transport Study is Unwarranted and Must be Rejected.

In its July 24 filing, GRDA identified 8 reasons why Commission staff should reject the proposed Contaminated Sediment Transport Study.[12] For brevity, this response does not replicate GRDA's full rationale for each of these 8 reasons. Instead, GRDA only addresses issues raised by Commenters in response to each of these 8 reasons.

As detailed below, and as further detailed in GRDA's July 24 filing, Commenters have failed to satisfy the mandatory ILP study criteria with respect to their proposed Contaminated Sediment Transport Study.[13] Accordingly, Commission staff should reject it as unwarranted.

1. GRDA's Project operations do not cause overbank flooding along Tar Creek or along the reaches of the Spring, Neosho, or Elk Rivers within and in the vicinity of the City of Miami (Criterion No. 5).

a. The City wrongfully relies on fictional scenarios in claiming that Project operations will increase the duration of inundation.

GRDA's July 24 filing explained that "the Commission-approved Study Plan has demonstrated that Project operations do not cause overbank flooding along Tar Creek, or along the Neosho and Spring rivers, in the vicinity of the City."[14] In response, the City complains that GRDA improperly limited the range of its starting water surface elevations to those it "anticipates" under a new

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[12] July 24 Filing, Accession No. 20230724-5120, at Appendix C.

[13] 18 C.F.R. § 5.9(b).

[14] July 24 Filing, Accession No. 20230724-5120, at Appendix C, at 52.

license, and noting—incorrectly—that "even that range is enough to increase the duration of flooding in areas along the Neosho River by up to 28 hours for the medium-frequency events where the Project has the greatest incremental effect on flooding."[15]

In leveling this complaint, the City ignores GRDA's discussion in its July 24 filing of its quantified modeling results, which GRDA explained as follows:

> The largest differences in duration for simulated starting elevations within GRDA's anticipated operational range occur in rural, sparsely populated areas. For the September 1993 (21 year) inflow event, the 28-hour maximum simulated difference in duration listed in Table 9 is isolated to RM 124 to 125 on the Neosho River. This location is between the Highway 60 Bridge at Twin Bridges State Park (RM 122.57) and the S 590 Road Bridge (RM 126.70). *The simulated difference in duration is isolated to this location* and does not extend either upstream or downstream. For the September 1993 (21 year) inflow event, *there are no other locations along the Neosho River with differences in duration greater than 8 hours*.[16]

Thus, the City's comment attempts to obscure important context and qualifications from GRDA's July 24 report, in what appears to be a transparent attempt to sensationalize the quantified model results by presenting isolated values and omitting the relevant contextualization provided by GRDA. For fictional scenarios in which the Corps fails to adhere to its Water Control Manual until the peak inflow reaches Pensacola Dam, GRDA's quantified results show that, in and around the City of Miami, the maximum simulated difference in duration for the anticipated operational range is 7 hours.[17] In that same fictional scenario, however, in and around the City of Miami, the maximum impact of nature is 226 hours, or approximately 28 days.[18]

In contrast, for realistic scenarios in which the Corps adheres to its Water Control Manual, the quantified results demonstrate that in and around the City of Miami, the maximum simulated difference in duration for the anticipated operational range is 4 hours.[19] Comparatively, the maximum impact of nature in the more realistic scenarios is 223 hours, which is approximately 28 days.[20] The values presented in GRDA's July 24 filing further confirm GRDA's conclusion that

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[15] Miami Comments, Accession No. 20230814-5198, at 3.

[16] July 24 Filing, Accession No. 20230724-5120, Attachment A: Supplementary Analysis No. 1, at 15 (emphasis added).

[17] *Id.* at 17.

[18] *Id.*

[19] Updated Study Report, Project No. 1494-438, Accession No. 20220930-5106, at Appendix 2: Hydrologic and Hydraulic Modeling: Upstream Hydraulic Model, Table 29 (filed Sep. 30, 2022) [hereinafter, USR].

[20] *Id.*

only natural inflows—and not Project operation—cause an appreciable difference in water surface elevations within the study area.[21]

b. The City inappropriately relies on extreme, hypothetical operations and a complete abdication by the Corps to support its sensationalized statements of inundation duration.

In its comment, the City states:

> GRDA next compares across the broader range of starting water surface elevations required by Staff (beginning at the reservoir's longtime target elevation of 734 and extending up to the top of the dam). This range of possible Project operations shows an impact on flood duration of 40 to 73 hours of additional inundation at places on the Neosho River, and (except in the very smallest, one-year event) 17 to 90 hours of additional inundation on Tar Creek itself.[22]

As explained below, the City's definition of "possible Project operations" is not, in fact, reasonably or physically possible at Pensacola Dam, but in meeting this claim the City betrays an admission that nature has an outsized impact that renders any potential impact of Project operations immaterial. To accept the figures presented by the City, Commission staff must conclude that: (1) the Corps will fail to adhere to its Water Control Manual until the peak inflow reaches Pensacola Dam; and (2) extreme, hypothetical starting elevations at Pensacola qualify as a "range of possible Project operations."[23] By not mentioning that the referenced durations of inundation can *only* be caused by the Corps failing to adhere to its Water Control Manual until the peak inflow reaches Pensacola Dam, the City seeks to present the quantifications in GRDA's July 24 filing as representative of anticipated operations, rather than what these scenarios actually represent: an extreme, fictional scenario that will never occur.

In reality, a reservoir water surface elevation equal to the top of dam (757 feet PD) is not a physically "possible Project operation" as claimed by the City, because the crest elevation of the spillway tainter gates is 755 feet PD.[24] As discussed in GRDA's July 24 filing, GRDA attempted to simulate a water surface elevation at Pensacola Dam equal to this so-called "possible Project operation" of 757 feet PD and found that *limitations of physical reality at Pensacola Dam prevented such operation*. Maintaining a water surface elevation equal to the top of the dam would require a constant, unceasing inflow of 600,000 cubic feet per second (cfs), which is twice

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[21] July 24 Filing, Accession No. 20230724-5120, Attachment A: Supplementary Analysis No. 1, at v.

[22] Miami Comments, Accession No. 20230814-5198, at 3-4.

[23] *Id.* at 4.

[24] Supporting Technical Information Document for the Pensacola Project No. 1494, Revision 3 (Jan. 2021), compiled by Burns & McDonnell Engineering Company, Inc., at 1-5.

the value of the instantaneous peak discharge of the 100-year event (which is 300,000 cfs).[25] On the other end of the extreme, the City's claim that elevation 734 feet is a "longtime target elevation" ignores the last 40 years of the Project's history. At no point during the current license term has GRDA been required to target elevation 734, and it has no plans to do so during the upcoming new license term.

No operational action by the Corps could create the condition the City refers to as a "possible Project operation." Only a natural flood, entirely out of the Corps' physical ability to control, could create such a condition. And of course, such a scenario is well beyond the scope of the "proposed action" and reasonable alternatives that FERC is required to consider under NEPA.[26]

Indeed, it is worth noting that the City's newest arguments contradict its prior arguments advanced in the ILP. Previously, the City strenuously argued that the instantaneous peak discharge of the 100-year hydrograph developed by GRDA is "more like a 1,000-year flood on the Neosho River."[27] Now, when that prior position is no longer convenient,[28] the City has performed an about-face and now argues just the opposite—that a constant, unceasing inflow twice the value of the 100-year instantaneous peak discharge should be considered by Commission staff when determining what constitutes "possible Project operations."[29]

Commission staff should reject these unprincipled and demonstrably fallacious arguments advanced by the City. Its claim that "this range of possible Project operations shows an impact on flood duration of 40 to 73 hours of additional inundation at places on the Neosho River, and (except in the very smallest, 1-year event) 17 to 90 hours of additional inundation on Tar Creek itself"[30] defies reality. And yet, in straining to develop any response to the compelling analyses presented in GRDA's H&H Modeling Study, the City unwittingly admits that nature has an outsized impact that renders any potential impact of Project operations immaterial—and surrenders its core position in this entire relicensing proceeding.

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[25] July 24 filing, Accession No. 20230724-5120, at Attachment A: Supplementary Analysis No. 1, at 5.

[26] *See , e.g., Theodore Roosevelt Conservation P'ship v. Salazar*, 661 F.3d 66, 72 (D.C. Cir. 2011) ("[t]he goals of an action delimit the universe of the action's reasonable alternatives").

[27] City of Miami's Comments on GRDA's Updated Study Report, Project No. 1494-438, Accession No. 20221129-5184, at 8 (filed Nov. 29, 2022).

[28] Of course, Commission staff repeatedly dismissed the City's arguments regarding the 100-year hydrograph. *See* 2023 SMD, Accession No. 20230314-3035, at B-8; Determination on Requests for Study Modifications and New Studies for the Pensacola Hydroelectric Project at B-15, Project No. 1494-438, Accession No. 20220224-3074 (issued Feb. 24, 2022).

[29] Miami Comments, Accession No. 20230814-5198, at 4.

[30] *Id.*

c. The City's claims of inundation areas are false and again rely on fictional, extreme modeling scenarios that were intentionally unrealistic.

In its comment, the City states:

> With respect to inundated *area*, GRDA's own modeling shows that just its 3-foot range of "anticipated" reservoir operating levels would translate to flooding of as much as 2,216 additional acres. Considering the full range of modeled water surface elevations, the operational impact ranges from over 16,000 acres of added flooding in about a 1-year event (June 2004), to about 8,500 additional acres in the 2007 flood, and anywhere from 4,000 to 11,000 additional acres in all of the other historical inflows that were modeled.[31]

Once again, the City has misrepresented GRDA's modeling results in an attempt to manufacture a non-existent impact of Project operations on flooding. When the City discusses inundated area, it mischaracterizes GRDA's quantified differences as "flooding" when in reality, the majority of the computed difference in area for a Project operational change is actually within the flood pool of Grand Lake.

To clarify this matter, GRDA subdivided the inundation area by reach and compared differences in inundation area. These data are presented in Appendix A.[32] As GRDA's results demonstrate, the quantified results show how Project operations have an immaterial impact on upstream inundation areas when compared to the impact of nature.[33]

Because the City continues to misrepresent the quantifications provided by GRDA, it is important to remember the history of GRDA's modeling efforts during years of study in accordance with the ILP and Commission staff's Study Plan determinations. As discussed in staff's March 2023 Determination, GRDA's simulation of Project operations, presented in the Updated Study Report (USR), were consistent with the Corps' standard operation procedure for flood control as specified in the Corps' Water Control Manual for Pensacola Dam and Reservoir.[34]

Commission staff also found that:

> [GRDA's] procedure used for starting times was based on the Corps' recommendation, per the HEC-RAS User's Manual, to start unsteady flow

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31 Miami Comments, Accession No. 20230814-5198, at 4.

32 *See* Appendix A at p. 1–2.

33 *Id.*

34 2023 SMD, Accession No. 20230314-3035, at B-7.

> simulations prior to flood wave arrival at the upper boundary of the model. GRDA's model is consistent with this approach.[35]

Even so, staff requested that GRDA simulate the unrealistic and "extreme" scenario in which the Corps fails to adhere to its Water Control Manual until the peak inflow reaches Pensacola Dam.[36] The City now seeks to focus Commission staff on these simulation results—hoping that staff will not only forget that these scenarios were intentionally developed as unrealistic and "extreme," but also ignore the compendium of technical information included in GRDA's USR. Therefore, in its decision-making process, the Commission should remember the quantified results presented in GRDA's H&H Modeling Study. In accordance with the FERC-approved Study Plan, simulations of baseline operations (i.e., a seasonal target rule curve) were compared against simulations of anticipated operations (i.e., maintaining the reservoir between elevations 742- and 745-feet PD). The following ranges of conditions were analyzed:

1. Extremely low (734 feet PD) through extremely high (757 feet PD) starting water surface elevations, including historical operational levels, and
2. Small (1-year) through large (100-year) inflow events, including historical inflow events.[37]

GRDA compared simulation results for baseline and anticipated operations along Grand Lake, the Neosho River, the Spring River, the Elk River, and Tar Creek. For *all* simulations, along *all* modeled reaches:

1. The maximum increase in water surface elevation was 0.05 feet.[38]
2. The maximum increase in duration of inundation was 2 hours.[39]
3. The inundation areas were virtually identical.[40]

Based on these quantifications, the H&H Modeling Study correctly concluded:

> Comparing anticipated operations to baseline operations for a suite of simulations that spanned the FERC-requested range of starting pool elevations and inflow event magnitudes, the results of the [Upstream Hydraulic Model] demonstrate that anticipated operations have an immaterial impact on upstream [water surface elevations], inundation, and duration as compared to baseline operations.[41]

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35 *Id.* at B-8.

36 *Id.*

37 USR, Accession No. 20220930-5106, Appendix 2: Hydrologic and Hydraulic Modeling: Upstream Hydraulic Model, at 62.

38 *Id*. at 63.

39 *Id*. at 65.

40 *Id*.

41 *Id*. at 68.

GRDA respectfully reminds Commission staff of these findings in light of the City's attempt to distract from the compendium of technical information developed by GRDA during multiple years of study in accordance with the ILP and staff's Study Plan determinations.

d. The City's analysis of historical gage data is fatally flawed.

In its comment, the City states:

> In addition to GRDA's new modeling results, the City also recently presented analysis of historical gage data showing a significant backwater effect in Miami as a function of Project operations. In sum, analysis by Tetra Tech of gage data from the Miami, Commerce, and Pensacola Dam gages shows that above flows of about 10,000 cfs, a change in water surface elevation at the dam drives a change of about 30 to 50% of that magnitude in water surface elevation in Miami, in contrast to the Commerce gage farther upstream, which experiences a much slighter impact (see figures below, reproduced from the City's Comments on GRDA's Draft License Application). . . .
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> All modeling aside, these data clearly show that the dam's *actual* operations have caused significant changes in water surface elevation in Miami. It defies credulity that the Project could significantly change the water surface elevation in Miami without also changing the distribution of the contaminated sediments carried by that same water.[42]

The City has already advanced this argument in this proceeding,[43] and GRDA has already responded to it.[44] For the convenience of Commission staff, GRDA's technical response to the City's flawed backwater analysis appears in Appendix A.

2. Overbank flooding occurs only during natural flooding events when the Corps has exclusive jurisdiction over Project operations (Criterion No. 5).

GRDA's July 24 filing explained that, in addition to the H&H Modeling Study and the complementary *History of Flooding*—both of which demonstrate that GRDA's Project operations do not cause overbank flooding—the proposed Contaminated Sediment Transport Study is

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[42] Miami Comments, Accession No. 20230814-5198, at 5-6 (emphasis in original).

[43] City of Miami's Comments on Draft License Application, Project No. 1494-438, Accession No. 20230330-5238, at 6-8 (filed Mar. 30, 2023).

[44] FLA, Accession No. 20230530-5192, Appendix X-1 at 32-35.

unwarranted because overbank flooding occurs only when the Corps has jurisdiction at Pensacola dam and is directing its operations, pursuant to its exclusive jurisdiction over flood control.[45]

The City attempts to diffuse this issue by pointing out that Section 7612 of the National Defense Authorization Act of 2019 confers exclusive jurisdiction to the Corps for management of the "flood pool," and arguing that under the statute, "the flood pool only includes the 'land and water . . . allocated for flood control or navigation' by the Corps, which extends only as high as elevation 755."[46] Thus, the City suggests that the Commission somehow reestablishes jurisdiction over Grand Lake when surface elevations exceed 755 feet PD, and can therefore require studies that investigate contamination in areas above the established flood pool.

There are numerous problems with the City's argument. To begin with, regardless of the extent of the Corp's jurisdiction, Congress has clearly limited the Commission's jurisdiction to areas within the current Project boundary, which generally runs along the 750-foot contour:

> (A) LICENSING JURISDICTION.—The licensing jurisdiction of the Commission for the project shall not extend to any land or water outside the project boundary.
>
> (B) OUTSIDE INFRASTRUCTURE.—Any land, water, or physical infrastructure or other improvement outside the project boundary shall not be considered to be part of the project.[47]

Because the Commission lacks licensing jurisdiction over any "land or water outside the project boundary," and because all lands and waters outside the boundary "shall not be considered to be part of the project," the Commission cannot possibly require the proposed Contaminated Sediment Transport Study. Study Criterion 5 demands that studies are performed for purposes of "inform[ing] the development of license requirements,"[48] and yet, Congress has removed the Commission's authority to regulate in the areas that are the subject of the proposed Contaminated Sediment Transport Study.

Moreover, the City is plainly wrong in arguing that the Corps loses flood control jurisdiction once Grand Lake rises above elevation 755 feet. Section 7 of the Flood Control Act of 1944, which the City completely overlooks, confers exclusive flood control jurisdiction to the Corps at Pensacola Dam and establishes no such jurisdictional upper limit based on a flood pool designation.[49] And as GRDA explained in responding to comments on the Draft License Application, the Corps' Water

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[45] July 24 Filing, Accession No. 20230724-5120, Attachment C at 52.

[46] Miami Comments, Accession No. 20230814-5198, at 5 (quoting Pub. L. 116-92, § 7612(a)(3), and citing 33 C.F.R. § 208.11(e)).

[47] Pub. L. 116-92, § 7612(b)(3).

[48] 18 C.F.R. § 5.9(b)(5).

[49] 33 U.S.C. § 709.

Control Manual for Pensacola Dam continues to regulate Grand Lake operations even when reservoir levels exceed elevation 755 feet.[50] Finally, the City's argument that the Corps loses exclusive flood control jurisdiction once Grand Lake exceeds elevation 755 feet is belied by a long list of other acts of Congress providing otherwise—including the Flood Control Act of 1936;[51] Flood Control Act of 1938;[52] Flood Control Act of 1941;[53] An Act to Authorize the Return of the Grand River Dam Project to the Grand River Dam Authority;[54] Public Law No. 100-202;[55] Water Resources Development Act of 1996;[56] Water Resources Development Act of 2000;[57] and Water Infrastructure Improvements for the Nation Act.[58]

For these reasons, the City cannot escape the reality that *whenever* overbank flooding occurs in the Project's headwaters, the Corps has exclusive control over Project operations—and FERC unquestionably lacks jurisdiction in areas of overbank flooding above the flood pool. Accordingly, the proposed Contaminated Sediment Transport Study lacks the requisite nexus under Study Criterion 5 and must be rejected.[59]

3. Because CERCLA directs EPA—and only EPA—to address Tar Creek Superfund site remediation, information produced by the proposed study will not inform license conditions (Criterion No. 5).

GRDA's July 24 filing explained that the proposed Contaminated Sediment Transport Study seeks to infringe on the U.S. Environmental Protection Agency's (EPA) statutory obligations under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).[60] In response, commenters insist that the Commission has an active role to play in EPA's Tar Creek Superfund site, urge staff to require their proposed study, and claim that GRDA must be required to participate in the Superfund clean-up effort[61]—despite the fact that EPA has administered the

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50 FLA, Accession No. 20230530-5192, Appendix X-1 at 63-65.

51 Pub. L. No. 74-738 (1936).

52 Pub. L. No. 75-761 (1938).

53 Pub. L. No. 77-228 (1941).

54 Pub. L. No. 79-573 (1946).

55 H.R. Rep. No. 100-498 (1987) (Conf. Rep.).

56 Pub. L. No. 104-303 (1996).

57 Pub. L. No. 106-541 (2000).

58 Pub. L. No. 114-322 (2016).

59 18 C.F.R. § 5.9(b)(5).

60 July 24 Filing, Accession No. 20230724-5120, Attachment C at 54-57.

61 LEAD Comments, Accession No. 20230814-5175, at 8; Tribes' Comments, Accession No. 20230815-5010, at 5.

Tar Creek Superfund site for over 40 years and has never identified GRDA as a CERCLA Potentially Responsible Party (PRP).[62]

Yet, the authorities cited by the City in its comment dictate the opposite of what Commenters request. In every hydropower proceeding cited by GRDA and the City regarding a Superfund site,[63] the Commission *declined* to take an active role—and instead deferred completely to EPA.

Commission staff's order in *City of St. Louis*, relied upon by the City,[64] is particularly instructive. There, staff included a license requirement directing the licensee to assist in the cleanup and monitoring of contaminants at a Superfund site, "if so requested by EPA or [Michigan Department of Environmental Quality]."[65] And even in this very proceeding, Commission staff has taken this exact same, deferential approach, explaining to LEAD that "staff does not intend to evaluate dredging of potentially contaminated sediments present in the lake. Any remedial measures would be the responsibility of the Environmental Protection Agency under [CERCLA]."[66]

Staff's deferential approach to EPA's CERCLA responsibilities in *City of St. Louis*, its same stated intent in this case, and its consistent approach in every other order in which a Commission-licensed project bears some relation to a Superfund site,[67] stands in stark contrast to the aggressive and overreaching role Commenters request of Commission staff with their proposed study in this case.

The City attempts to assuage this disparity by suggesting that simply undertaking a study would not infringe on EPA's responsibilities under CERCLA.[68] But that position overlooks that FERC's Study Criterion 5, which demands that studies be required only for purposes of establishing mitigation measures.[69] And Commenters' stated purpose in advocating for their requested Contaminated Sediment Transport Study is to compel GRDA to remediate contaminated

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[62] Under CERCLA, a "potentially responsible party" is an individual or company that may be responsible for causing or contributing to contamination at a Superfund site. *See* 40 C.F.R. § 304.12(m).

[63] July 24 Filing, Accession No. 20230724-5120, Attachment C at 55.

[64] Miami Comments, Accession No. 20230814-5198, at 6.

[65] 97 FERC ¶ 62,184, at p. 64,273 (2001).

[66] Scoping Document 2 for the Pensacola Hydroelectric Project, Project No. 1494-438, Accession No. 20180427-3008, at 9 (issued Apr. 27, 2018) [hereinafter, SD2].

[67] *Green Energy Storage Corp.*, 150 FERC ¶ 61,042, at P 8 (2015); *Clark Fork & Blackfoot, LLC*, 110 FERC ¶ 61,024, at P 16 (2005); *Mont. Power Co.*, 91 FERC ¶ 61,280, at p. 61,994 (2000).

[68] Miami Comments, Accession No. 20230814-5198, at 6.

[69] 18 C.F.R. § 5.9(b)(5).

shorelines.[70] Thus, they are requesting the Commission, in essence, to treat GRDA as a PRP under CERCLA—and thus undermine and infringe upon EPA's authority.

4. Environmental and health effects of contaminants are well documented and need no further study (Criterion No. 4).

GRDA's July 24 filing explained that neither the City nor LEAD had put forth any evidence suggesting that contaminated sediment from EPA's Tar Creek Superfund site contributed to adverse effects in the Project area and that, in any case, the health effects caused by contamination from the Superfund site have been (and continue to be) extensively studied by EPA as part of its CERCLA program.[71]

Undeterred, Commenters continue to press Commission staff to recommend that GRDA complete their proposed Contaminated Sediment Transport Study because of the dire public health effects caused by contaminants originating from EPA's Tar Creek Superfund site.[72]

GRDA does not dispute the significant health problems caused by the contaminants emanating from EPA's Tar Creek Superfund site. As GRDA expressed in its July 24 filing, "[t]hese are vital matters for our community to address."[73] But the seriousness of the adverse health effects of these contaminants alone is not a sufficient basis for Commission staff to require GRDA to undertake a study. In the more than five years since the City first proposed the Contaminated Sediment Transport Study, none of the Commenters have demonstrated that contaminated sediments from EPA's Tar Creek Superfund site cause any adverse health effects in the Project area. Quite to the contrary, GRDA has demonstrated that concentrations of contaminants within Grand Lake and its shoreline areas are significantly less than upstream areas and are below the low-level risk threshold.[74] Lacking any evidence of a problem within the Project area, Commission staff cannot require the requested study.[75]

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[70] Miami Comments, Accession No. 20230814-5198, at 4 ("GRDA's flowage rights do not mitigate its contamination impacts."); Tribes' Comments, Accession No. 20230816-5057, at 6 ("A study would provide vital information as to the extent of project-related effects on tribal cultural properties due to contaminated sediment transport, in addition to shedding light on potential measures to mitigate such effects through the Section 106 process, including appropriate license conditions."); LEAD Comments, Accession No. 20230814-5175, at 8 ("In addition, we are concerned about the ongoing contamination of the lake and what GRDA intends to do about it.").

[71] July 24 Filing, Accession No. 20230724-5120, Attachment C at 58.

[72] LEAD Comments, Accession No. 20230814-5175, at 4; Tribes' Comments, Accession No. 20230816-5057, at 1.

[73] July 24 Filing, Accession No. 20230724-5120, Attachment C at 57.

[74] *Id.*, Attachment C at 37-39.

[75] *City of Centralia v. FERC*, 213 F.3d 742, 749 (D.C. Cir. 2000) (overturning FERC's decision to require study of anadromous fish on the basis that the record was devoid of evidence indicating any harm to such species and providing that "FERC is certainly empowered to require an applicant to conduct a study when there is some evidence of a problem and a study is necessary to determine the extent of the harm. But not even FERC is suggesting that an applicant has a duty to determine if a problem exists").

5. A wealth of existing information is already available to inform FERC's cumulative impacts analysis of contaminated sediment transport and deposition (Criterion No. 4).

GRDA's July 24 filing stated that commenters' request for GRDA to undertake a Contaminated Sediment Transport Study ignores that the health effects of contaminants originating at EPA's Tar Creek Superfund site have been studied extensively and are well understood, and that the primary impacts have been observed well upstream of the Project.[76]

In response, the City argues that "studies of the environmental and health effects of contaminants are no substitute for a study of how Project operations distribute those contaminants."[77] Yet, the City overlooks the fact that EPA's Superfund program has, in fact, extensively studied all of the various vectors of contamination transport from the Tar Creek Superfund site, including surface water, groundwater, wind, and airborne distribution.[78] While the City and other Commenters may desire a site-specific study that models sediment transport within the Project area, it is well-established that NEPA does not require this level of precision.[79] Unquestionably, the Commission can rely on similar, existing information and still meet its obligations under the FPA and NEPA. In fact, Study Criterion 4 expresses a strong policy that Commission staff will not require additional study where sufficient information already exists.

6. City of Miami and Others Bear Significant Responsibility for the Spread of Contaminants (Criterion No. 5).

GRDA's July 24 filing described how the anthropogenic distribution of chat in the City and adjacent areas is a primary cause of contamination, not flooding and deposition of contaminated sediment.[80]

In its response comment, the City attempts to dismiss this concern with the conclusory statement that "those effects have no nexus to the Project."[81]

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[76] July 24 Filing, Accession No. 20230724-5120, Attachment C at 58.

[77] Miami Comments, Accession No. 20230814-5198, at 7.

[78] July 24 Filing, Accession No. 20230724-5120, Attachment C at 33-35.

[79] *See, e.g., U.S. Dep't of Interior v. FERC*, 952 F.2d 538, 546 (D.C. Cir. 1992); *State of Alaska v. Andrus*, 580 F.2d 465, 473 (D.C. Cir. 1978), *vacated in part sub nom. W. Oil & Gas Ass'n. v. Alaska,* 439 U.S. 922 (1978) ("NEPA cannot be 'read as a requirement that [c]omplete information concerning the environmental impact of a project must be obtained before action may be taken.") (quoting *Jicarilla Apache Tribe of Indians v. Morton*, 471 F.2d 1275, 1280 (9th Cir. 1973)).

[80] July 24 Filing, Accession No. 20230724-5120, Attachment C at 63-64.

[81] Miami Comments, Accession No. 20230814-5198, at 8.

Of course, the City is wrong. As documented in GRDA's July 24 filing, the use of chat has been pervasive throughout the City and surrounding areas as roadbeds, filling material, and other anthropogenic uses. And when that material disperses through overland flows, precipitation, or even wind, it is obvious to recognize that some of those contaminants are deposited within the Project area. Indeed, studies that have documented the presence of contaminants from EPA's Tar Creek Superfund site as far away as Tulsa due to wind-blown soils; obviously, a leaching roadbed running along the Project shoreline will contribute to elevated levels of contaminants within the Project area.[82]

Contrary to the City's summary dismissal of GRDA's concern, LEAD at least acknowledges the widespread historical use of chat throughout the Miami area and the complexity associated with its distribution.[83]

Still, all Commenters—in an effort to keep Commission staff focused on only a small fraction of an extraordinarily complex problem—fail to disclose the dynamic environment and myriad ways that contaminants can end up in the reservoir. Instead, they insist that useful information will be yielded only by modeling transport that is caused by raising and lowering the reservoir level. The presence of contaminated soils along the Project shoreline may be attributable to a myriad of sources—water-based transport; overland erosion from a nearby roadbed or other construction application; wind; or groundwater. And yet, Commenters' proposed Contaminated Sediment Transport Study seeks to isolate only surface water transport—and worse, assume that *all* contamination that may arrive along the Project's shoreline is attributable to water surface transport. By any measure, it is a seriously flawed study proposal that must be rejected.

7. The modeling methodology proposed in the contaminated sediment transport study is not generally accepted in the scientific community (Criterion No. 6).

GRDA's July 24 filing described how the City's proposed methodologies for a Contaminated Sediment Transport Study, which would include an Environmental Fluid Dynamics Code (EFDC) model calibrated with water and sediment samples, are fatally flawed.[84]

a. The City's model has multiple critical errors in the technical methodology.

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[82] July 24 Filing, Accession No. 20230724-5120, Attachment C at 34.

[83] LEAD Comments, Accession No. 20230814-5175, at 7-8.

[84] July 24 Filing, Accession No. 20230724-5120, Attachment C at 64.

In its response comment, the City complains that GRDA is "nitpicking the technical methodology" of their proposed model.[85] However, GRDA's concerns are far from mere nitpicking. The City's proposed model has foundational flaws that warrant rejection by Commission staff.

The most critical issue is a lack of calibration to data on contaminant levels present in the various portions of the model domain.[86] The City's failure to include this elementary but critical component of any modeling study strongly indicates a lack of care and attention to detail in developing the plan. There must be some attempt to show model accuracy. Not even discussing this point in its study plan is a significant omission on the part of the City.

The inattention to detail is confirmed by the apparent lack of understanding of SEDflume testing. Core samples are both required for SEDflume and explicitly *not* planned to be collected according to the City's study plan.[87] Reconstructing cohesive grab samples into a core after other testing as the City proposes will change cohesive properties and defeats the whole purpose of SEDflume testing.

b. The City's proposed model has many of the same flaws of the proposed model rejected by EPA's Contaminated Sediment Technical Advisory Group.

The City also claims that the EPA's Contaminated Sediment Technical Advisory Group (CSTAG) evaluated and rejected a model that was significantly different from their proposed model.[88] This is simply untrue. The City states that its proposed study is much more focused,[89] yet it is based on a model framework substantially similar to that evaluated and rejected by CSTAG. And while the City's proposal attempts to be more focused, it does so by reducing modeling scope and completely ignoring critical transport vectors as discussed in more detail below. It evaluates just one of the contaminant transport pathways (stream-based sediment transport), and it asks Commission staff to ignore the missing pathways (including anthropogenically distributed chat, groundwater seepage, surface water inflows, and wind-based transport) and the resulting implications if those others are neglected. This fact alone means the model cannot provide predictions for contaminant transport with any confidence, and drawing actionable conclusions from outputs would require accepting results well beyond the reasonable range of model capabilities.

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85 Miami Comments, Accession No. 20230814-5198, at 7.

86 July 24 Filing, Accession No. 20230724-5120, Attachment C at 65.

87 *Id.* at 65-66.

88 Miami Comments, Accession No. 20230814-5198, at 8-10.

89 *Id.* at 8-9.

The City claims the model domain is much smaller than the model reviewed by CSTAG.[90] However, the City fails to disclose that its proposed model would include, at a minimum, 75 miles of Grand Lake tributaries and more than 260 square miles (roughly 165,000 acres) of combined river and adjacent floodplain area. The City tries to soften that reality by stating the study area is "mostly or entirely within the domains already studied by the H&H and sedimentation studies."[91] Unquestionably, that is not a small, focused study area, and the fact it has already been modeled by GRDA during the H&H and Sedimentation Studies is largely irrelevant because the City is proposing development of a completely new model in a separate software package with separate goals.

Data collection to support this effort would necessarily be extensive. It would include an extremely detailed review of previous studies and associated data to evaluate the existing datasets and evaluate the location, timing, and reliability of all previous contaminant measurements; fieldwork to collect contaminant information for stream sediment, water quality, and overland soils where data are unavailable; and laboratory analyses for SEDflume, contaminant data, and grain size assessments. As stated above, just because the proposed plan ignored upland areas does not mean it is an appropriate strategy, and GRDA would need to characterize more than 260 square miles of river and floodplain and 75 river miles of tributaries.

Instead of using HEC-HMS to evaluate overland flow contributions to contaminant loading, the City writes explicitly that the incoming contaminant loads would be based, at least in part, on "existing and proposed contaminant data,"[92] with no explanation for how the "proposed" data would be determined or justified. There is no indication that overland flow would be evaluated to provide input on contamination, and the City is resistant to studying upland contaminants on City land. The required fieldwork would be significant, and it is not clear that the study area could be well-characterized based on the City's sampling plans, which do not appear to evaluate heavy metal contamination in their sediment or water samples.

The City suggests the use of EFDC for its Contaminated Sediment Transport Study.[93] Although this software is suited to multi-dimensional flow modeling and can be applied to such studies, using it without evaluating all transport pathways and assuming all contaminant distribution is exclusively from fluvial sediment transport shows a lack of understanding of the complexity and inter-relatedness of the processes involved. Instead of recognizing contamination from repurposed chat in the City as a significant contributor to the problem, the proposed study would suggest all contamination in urbanized areas comes from Tar Creek and Neosho River flooding. The proposal that CSTAG evaluated did not arbitrarily choose to evaluate runoff and contaminant

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90 *Id.* at 9.

91 *Id.*

92 *Id.* at 8.

93 *Id.* at 9-10.

sources from upland areas; that is a key part of evaluating the sediment transported to the streams and surrounding areas.

c. The City's position on the need to evaluate contamination within City limits is inconsistent and not grounded in a desire for a defensible, scientific study.

The discussion about what is included in the waterways versus upland areas is also problematic due to the lack of contaminant contribution from overland sources due to the City's software choices. The City states that there is no need for a HEC-HMS model.[94] The suggested plan would "blame" all transport exclusively on fluvial distribution. It completely ignores other pathways of transport as defined by EPA, explicitly recommended for study and characterization before modeling by CSTAG,[95] and highlighted in GRDA's July 24 filing:[96]

1. **Anthropogenic distribution of chat.** Specifically, the chat used as construction material within and around the City.
2. **Surface water inflow.** Acid mine drainage and dissolved metals leaving the TSMD as surface water.
3. **Groundwater.** Acid mine water and dissolved metals leaving the TSMD as groundwater.
4. **Wind.** Eolian transport of mine waste and contaminants.
5. **Erosion/sediment transport.** Overland flow from precipitation runoff and subsequent instream transport of contaminants.

The City's argument in this respect is inconsistent and self-serving. By ignoring the full range of transport pathways, the City's model would shift the supposed source of all contamination to streamflow and sediment transport. This artificially minimizes effects of the City's own actions of allowing chat to be used for anthropogenic purposes within the natural floodplain. Furthermore, the City's proposed modeling plan strongly implies that it does, in fact, understand that overland sources are important to study—its study proposal calls for grab sampling and (invalid) SEDflume testing of chat pile sediments, which are certainly not placed directly in streams.[97] Curiously, the City's objection to studying overland sources is limited to areas within City limits, demonstrating that its inconsistency on this topic is purely based on whether it is conveniently beneficial to protecting its bias and confirming its misconceptions of reality, rather than abiding by proven scientific principles.

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[94] *Id.* at 9.

[95] Contaminated Sediments Technical Advisory Group, Memorandum to Katrina Higgins-Coltrain, US EPA Region 6, and Elizabeth Hagenmaier, US EPA Region 7, regarding: CSTAG Recommendations on the Tri-State Mining District Watershed, CSTAG Milestone Meeting 1 – Site Characterization, Recommendation a.2 at 4 (Oct. 21, 2022) [hereinafter, Oct. 2022 CSTAG Memo].

[96] July 24 Filing, Accession No. 20230724-5120, Attachment C at 29-30.

[97] Comments of City of Miami on Pre-Application Document, Scoping Document 1, and Study Requests, Project No. 1494-438, Accession No. 20180313-5162, Attachment 9 at 8 (filed Mar. 13, 2018).

The City claims assessing contamination within City limits is the primary purpose of their planned study because naturally occurring floods potentially redistribute contaminated sediment and negatively impact residents.[98] However, it states that City-caused contamination does not need to be included in models because it is in overbank areas and runoff from them is irrelevant, stating that:

> those effects have no nexus to the Project. GRDA is of course free to expand upon the scope of required studies. But as far as the City can see, the Project only affects transport of contaminated sediments that come into contact with Project-affected waterways—which is where the City proposes to sample, study, and model them.[99]

But Commission staff cannot let the City have it both ways. Either:

1. GRDA's operations cause stream-based flooding in the City (a claim which the City still has not substantiated with any scientific evidence) and therefore the aforementioned anthropogenically distributed chat is in contact with the nearby streams; or

2. There is no need to study the contaminant sources in the City because natural floods never get far enough out of the Tar Creek or Neosho River channels to contact those sources or deposit contaminants in City limits, in which case there is no nexus to the Project.

GRDA acknowledges that CSTAG indicated that modeling may have utility.[100] However, there is no indication that the City's proposal would provide a model that meets CSTAG's goals and standards for developing a reliable, informative, and scientifically defensible model. The proposed Contaminated Sediment Transport Study, as written by the City, still requires significant fieldwork to characterize a large study area, relies on conclusions from a model with significant uncertainty in the results, neglects all but one of the five transport pathways, and suggests that anthropogenic sources of contamination within the City are irrelevant despite that being obviously untrue.

For all these reasons, the poorly conceived Contaminated Sediment Transport Study would not be generally accepted in the scientific community and must be rejected.[101]

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98 *Id.* at 4; *see also* Comments of Ben Loring on GRDA's DLA, Project No. 1494-461, Accession No.20230310-0010, at p. 114 (discussing the 2007 flood and citing to Harvard School of Public Health & Wellesley College's Post Flood Soil Sampling, which concluded that "[m]etal concentrations generally were below levels of health concern").

99 Miami Comments, Accession No. 20230814-5198, at 8.

100 Oct. 2022 CSTAG Memo at CSTAG Milestone Meeting 1 – Site Characterization.

101 18 C.F.R. § 5.9(b)(6).

8. The proposed contaminated sediment transport study would be prohibitively expensive, delay the relicensing process, and fail to produce any reliable results (Criterion No. 7).

GRDA's July 24 filing explained that, while the City estimated that its proposed Contaminated Sediment Transport Study would cost approximately $342,000, the actual cost would be closer to $2 million and provided a detailed breakdown and description of costs required to complete the study.

In its August 14 comments, the City attempts to dismiss GRDA's cost concerns, opining only that they are "self-inflicted, and likely overblown,"[102] but without providing any explanation on how GRDA's cost analysis was at all inaccurate. The fact of the matter is, the City and other Commenters are advocating for the preparation of an entirely new model in this relicensing process that has already seen the development of two other models that took many years to develop. There is no assurance that a different process would be successful for the development of a contaminated sediment transport model—particularly since EPA's own expert panel has counseled against the use of such an approach.

And in response to the City's curt dismissal of GRDA's significant cost concerns, it should not be lost on Commission staff that through the course of this relicensing effort, the City has repeatedly underestimated how much its requested studies would cost.[103] Its views on this matter lack any credibility.

Using EFDC at this stage of the relicensing process would surely result in significant delay and considerable costs. The time needed to collect the necessary calibration data would be significant, and the model development process would require months of effort—if not longer. Just to prepare for an initial report for such a model, the study team would need to:

1. Develop a model grid that would include current and historic river channels and adjacent floodplains, which would need to simulate wetting and drying of floodplain areas while balancing tradeoffs between accuracy and computational efficiency (an iterative process);
2. Develop the model terrains for circa-1940, 2009, and 2019 (geometry, roughness parameters, etc.);
3. Simulate specific flow events and adjust input parameters (e.g., roughness) to match measured WSEs (an iterative process);
4. Define sediment property parameters (density, grain size, erosion resistance, etc.) and transport parameters, including incoming loadings of solids and associated grain size distribution for all tributary and overland flow inflow sources in the model domain;

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[102] Miami Comments, Accession No. 20230814-5198, at 10.

[103] *See, e.g.,* Comments of the City of Miami, Oklahoma on GRDA's Pre-Application Document, Scoping Document 1, and Study Requests, Project No. 1494-438, Accession No. 20180313-5162, at 15 (filed Mar. 13, 2018).

5. Simulate sedimentation from circa-1940 to 2019 and adjust model input parameters to match measured deposition patterns and suspended sediment concentrations over a range of flows (an iterative process);
6. Define contaminant fate and transport parameters (including concentrations associated with various source pathways based on data from fieldwork and literature reviews);
7. Simulate contaminant distribution throughout the period of record and adjust contaminant model input parameters to match measured concentrations in river/creek sediment and floodplain soil (an iterative process);
8. Compute predictive 50-year simulations and process data; and
9. Report results.

After completing these activities, there is abundant precedent suggesting the team would need to hold a technical conference; make modifications based on review and engagement by Commission staff and relicensing participants; re-run many of the simulations; and report the findings again. From initiation of the study to re-reporting, this process will almost certainly require multiple years of effort from GRDA and cost GRDA's customers millions of dollars.

II. Proposed Alternative: Desktop Study of Contaminated Sediment Transport

For all the reasons above, the Contaminated Sediment Transport Study advocated by the City and other Commenters must not be required. Not only have Commenters failed to establish the critical fact identified by Commission staff—i.e., Project operations contributing to overbank flooding in the Project's headwaters—but the proposed study would infringe upon the jurisdiction of both the Corps and EPA; replicate reliable scientific information that is already in the public domain; fail to address the full complexity of contaminated sediment transport within the Project area; and produce information from a highly questionable model that does not conform to even basic modeling principles and would not satisfy the objectives of modeling as described by CSTAG. And it would do so at a cost of over $2 million and result in a years-long delay of the relicensing process.

At the same time, GRDA recognizes that even though the complete scientific, technical, and historic record in this relicensing effort conclusively demonstrates that Project operations are not contributing to overbank flooding in the Project's headwaters, the Commission must satisfy its NEPA obligations by analyzing cumulative effects.[104] And in this regard, the Commission's Scoping Document 2 has already identified contaminated sediment transport as an issue to be analyzed as a cumulative effect:

> We revised the second bullet in section 4.2.1, Geology and Soils, to include the effects of project operations on the transport and subsequent deposition of potentially contaminated sediment, without restricting the geographic scope of

[104] *See, e.g., Theodore Roosevelt Conservation P'ship v. Salazar*, 616 F.3d 497, 503 (D.C. Cir. 2010); *TOMAC, Taxpayers of Mich. Against Casinos v. Norton*, 433 F.3d 852 (D.C. Cir. 2006).

> analysis to the existing project boundary, and to reflect our intention to analyze the resource for cumulative effects.[105]

GRDA also recognizes that the Commission typically does not require license applicants to conduct studies for cumulative effects issues.[106] But in this case, there is a tremendous wealth of information regarding contaminated sediment transport from EPA's Tar Creek Superfund site and the Tri-State Mining District generally, as GRDA pointed out in its July 24 filing.[107]

For this reason, if Commission staff would find it helpful, GRDA proposes to undertake a desktop study to review existing reports, studies, and other information regarding contamination and contaminated sediment transport, and to prepare a summary of this information in a study report that addresses contaminant transport and fate in the Project area. A proposed study plan for this effort appears in Appendix B.

Importantly, GRDA would propose to conduct this study in consultation with relicensing participants, including the Commenters. Specifically, GRDA would propose to: (1) reach out to relicensing participants at the beginning of study implementation and solicit any relevant information they may have in their files or of which they may have knowledge; and (2) provide an opportunity for relicensing participants to comment on a draft study report. All comments received on the draft would be documented as an appendix to GRDA's final study report submitted to the Commission.

If Commission staff is receptive to this proposal, GRDA estimates that it would take several months to complete this work, resulting in the following proposed adjustment to the relicensing process plan and schedule:

C.F.R.	Lead	Activity	Timeframe	Deadline
N/A	FERC	Resolution of outstanding Disagreements / Study Plan Determination, including *Contaminated Sediment Transport Study*	No later than 21 days after responses to comments on materials filed in Resolution of USR Disagreements / Study Plan Determination	9/25/2023
N/A	GRDA	Solicit information on contamination and contaminant transport from relicensing participants	No later than 30 days after FERC's resolution of outstanding disagreements / Study Plan Determination	10/25/2023

[105] SD2, Accession No. 20180427-3008, at 9. The City accuses GRDA of "tr[ying] to reframe" this statement in SD2, for the obvious reason that staff's statement does not fit the City's debunked narrative that contaminated sediment transport should be considered a direct or indirect effect. Miami Comments, Accession No. 20230814-5198, at 3. Yet, Commission staff—not GRDA—first identified contaminated sediment transport as a cumulative effect.

[106] *See* July 24 Filing, Accession No. 20230724-5120, Attachment C at 60.

[107] *Id.*, Attachment C at 61-63.

C.F.R.	Lead	Activity	Timeframe	Deadline
N/A	Stakeholders/ FERC	Submit any relevant information on contamination and contaminant transport to GRDA	No later than 30 days after GRDA submits its solicitation	11/24/2023
N/A	GRDA	Submit a draft report for review and comment by relicensing participants	No later than 150 days after FERC's resolution of outstanding disagreements / Study Plan Determination	2/22/2024
N/A	Stakeholders/ FERC	Submit comments on draft report	No later than 30 days after GRDA submits draft report	3/23/2024
N/A	GRDA	Submit final report	No later than 30 days after deadline for comments on draft report	4/22/2024
18 C.F.R. § 5.22(a)	FERC	Notice of acceptance and ready for environmental review	No later than 30 days after GRDA's submission of final report	5/22/2024

III. Conclusion

GRDA appreciates this opportunity to submit this response to Commenters' proposed Contaminated Sediment Transport Study and looks forward to working with Commission staff and all relicensing participants through the remainder of this relicensing process. Should you have any questions regarding this filing, please do not hesitate to contact Jacklyn Smittle at 918-981-8473 or jacklyn.smittle@grda.com.

Sincerely,

Brian N. Edwards
Executive Vice President
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Appendices

cc: Attached Distribution List

Stakeholder Distribution List
July 2023

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APPENDIX A

Response to Technical Comments on July 24 Filing

Appendix A

Introduction

Comments filed by the City of Miami, Oklahoma (City)[1] contain technical errors and misrepresent the quantifications provided by Grand River Dam Authority (GRDA) as part of the Integrated Licensing Process (ILP) for Pensacola Hydroelectric Project No. 1494 (Project). This appendix includes technical analyses that correct the City's technical errors and provide accurate quantifications. This appendix is specifically in support of two subsections of GRDA's Response to Comments on Relicensing Study Plan. Those subsections are titled:

1. The City's claims of inundation areas are false and again rely on fictional, extreme modeling scenarios that defy reality.
2. The City's analysis of historical gage data is fatally flawed.

The two sections below use these same titles to aid in cross-referencing.

The City's claims of inundation areas are false and again rely on fictional, extreme modeling scenarios that defy reality.

In its comment, the City states:

> With respect to inundated *area*, GRDA's own modeling shows that just its 3-foot range of "anticipated" reservoir operating levels would translate to flooding of as much as 2,216 additional acres. Considering the full range of modeled water surface elevations, the operational impact ranges from over 16,000 acres of added flooding in about a 1-year event (June 2004), to about 8,500 additional acres in the 2007 flood, and anywhere from 4,000 to 11,000 additional acres in all of the other historical inflows that were modeled.[2]

When the City discusses inundated area, it characterizes GRDA's quantified differences as "flooding" when in reality, the majority of the computed difference in area for a Project operational change is actually within the flood pool of Grand Lake.

To clarify this matter, GRDA subdivided the inundation area by reach and compared differences in inundation area. **Table 1** presents the maximum differences in inundation area for simulated starting water surface elevations within GRDA's anticipated operational range. The first six rows in the table characterize the theoretical, potential impact of GRDA's anticipated operations and the last two rows characterize the impact of nature.

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[1] Comments on GRDA's Additional Information and Analyses Requested by Commission Staff and Response to Request for Contaminated Sediment Transport Study, Project No. 1494-461, Accession No. 20230814-5198 (filed Aug. 14, 2023) [hereinafter, Miami Comments].

[2] Miami Comments, Accession No. 20230814-5198, at 4.

The quantified values in **Table 1** show that the City's statements about "flooding" are a mischaracterization of the model results. In and around Miami, the maximum difference in inundation area for simulated starting elevations within GRDA's anticipated operational range is 47 acres, and that area is contained within the flowage easement. If only areas outside the flowage easement are considered, the maximum difference is 26 acres, and that difference in inundation occurs when the United States Army Corps of Engineers (Corps) is performing flood control.

The simulated inundation area differences due to a change in starting elevation at Pensacola Dam within GRDA's anticipated operational range are orders of magnitude smaller than the inundation differences that can be caused by nature. More specifically:

1. Along the Neosho River, in and around Miami, the impact of nature ranges from 63 to 2,344 times greater than the maximum simulated impact of GRDA's anticipated operational range.
2. Along the Spring River, the impact of nature ranges from 63 to 4,068 times greater than the maximum simulated impact of GRDA's anticipated operational range.
3. Along the Elk River, the impact of nature ranges from 44 to 1,713 times greater than the maximum simulated impact of GRDA's anticipated operational range.
4. Along Tar Creek, the impact of nature ranges from 93 to 1,778 times greater than the maximum simulated impact of GRDA's anticipated operational range.

Table 1. Summary of inundation areas for starting elevations within GRDA's anticipated operational range.

Event(s)	Maximum Differences in Inundation Area (acres) for Starting Elevations Within GRDA's Anticipated Operational Range			
	Neosho River[a]	Spring River	Elk River	Tar Creek
Sep 1993 (21 year)	26[b]	3	5	9
Jun 2004 (1 year)	47[c]	89	52	11
Jul 2007 (4 year)	19	82	68	10
Oct 2009 (3 year)	9	40	56	3
Dec 2015 (15 year)	25	1	2	2
100-year	2	4	3	1
Impact of nature (historical events only)	2,953	5,638	2,982	1,064
Impact of nature (inc. 100-year event)	4,749	5,638	2,982	2,109

[a] In and around the City of Miami (RM 133 to 137).
[b] If only area outside the flowage easement is considered, this 26-acre value is the maximum difference in inundation area in and around the City of Miami. This 26-acre value, and other area differences listed in this column, only occur when the Corps is performing flood control. The exception is the June 2004 (1 year event), which is contained within the flowage easement.
[c] The difference in inundation area for the June 2004 (1 year event) is contained within the flowage easement.

Table 2 presents the maximum differences in inundation area for extreme, hypothetical starting

water surface elevations outside GRDA's anticipated operational range. Even using simulations of starting water surface elevations at Pensacola Dam that vary by 23 vertical feet, with the maximum simulated starting water surface set to an elevation that is physically impossible for the Corps to maintain unless nature provides a constant, unceasing inflow of 600,000 cfs,[3] the impact of nature is much greater than that of a 23-foot change in starting water surface elevation at Pensacola Dam. More specifically:

1. Along the Neosho River, in and around Miami, the impact of nature ranges from 3.8 to 479 times greater than the maximum simulated impact of GRDA's anticipated operational range.
2. Along the Spring River, the impact of nature ranges from 3.0 to 259 times greater than the maximum simulated impact of GRDA's anticipated operational range.
3. Along the Elk River, the impact of nature ranges from 2.0 to 21 times greater than the maximum simulated impact of GRDA's anticipated operational range.
4. Along Tar Creek, the impact of nature ranges from 4.1 to 409 times greater than the maximum simulated impact of GRDA's anticipated operational range.

Table 2. Summary of inundation areas for extreme, hypothetical starting elevations outside GRDA's anticipated operational range.

Event(s)	Maximum Differences in Inundation Area (acres) for Extreme, Hypothetical Starting Elevations Outside GRDA's Anticipated Operational Range			
	Neosho River[a]	Spring River	Elk River	Tar Creek
Sep 1993 (21 year)	117	40	309	37
Jun 2004 (1 year)	771	1,872	1,458	261
Jul 2007 (4 year)	47	128	376	23
Oct 2009 (3 year)	215	266	728	57
Dec 2015 (15 year)	250	78	142	69
100-year	10	22	231	5
Impact of nature (historical events only)	2,953	5,638	2,982	1,064
Impact of nature (inc. 100-year event)	4,749	5,638	2,982	2,109

[a] In and around the City of Miami (RM 133 to 137).

Table 3 presents the maximum differences in inundation area for simulated starting water surface elevations within GRDA's anticipated operational range, for fictional scenarios in which the Corps fails to adhere to its Water Control Manual until the peak inflow reaches Pensacola Dam. The impact of nature is still orders of magnitude higher than the theoretical impact of operations if the Corps failed to adhere to its Water Control Manual. More specifically:

[3] See July 24 Filing, Accession No. 20230724-5120, Attachment A: Supplementary Analysis No. 1, at 5.

1. Along the Neosho River, in and around Miami, the impact of nature ranges from 28 to 2,070 times greater than the maximum simulated impact of GRDA's anticipated operational range.
2. Along the Spring River, the impact of nature ranges from 33 to 1,525 times greater than the maximum simulated impact of GRDA's anticipated operational range.
3. Along the Elk River, the impact of nature ranges from 11 to 3,498 times greater than the maximum simulated impact of GRDA's anticipated operational range.
4. Along Tar Creek, the impact of nature ranges from 41 to 1,517 times greater than the maximum simulated impact of GRDA's anticipated operational range.

Table 3. Summary of inundation areas for starting elevations within GRDA's anticipated operational range, for fictional scenarios in which the Corps fails to adhere to its Water Control Manual until the peak inflow reaches Pensacola Dam.

Warning! This table represents fictional scenarios in which the Corps fails to adhere to its Water Control Manual until the peak inflow reaches Pensacola Dam.				
Event(s)	Maximum Differences in Inundation Area (acres) for Starting Elevations Within GRDA's Anticipated Operational Range			
	Neosho River[a]	Spring River	Elk River	Tar Creek
Sep 1993 (21 year)	35	5	5	12
Jun 2004 (1 year)	106	174	81	26
Jul 2007 (4 year)	6	154	261	3
Oct 2009 (3 year)	31	43	113	5
Dec 2015 (15 year)	61	16	1	15
100-year	2	4	7	1
Impact of nature (historical events only)	2,945	5,693	2,960	1,055
Impact of nature (inc. 100-year event)	4,772	5,693	2,960	2,025
[a] In and around the City of Miami (RM 133 to 137).				

Table 4 presents the maximum differences in inundation area for extreme, hypothetical starting water surface elevations outside GRDA's anticipated operational range, for fictional scenarios in which the Corps fails to adhere to its Water Control Manual until the peak inflow reaches Pensacola Dam. This scenario represents the compounding effects of the following two factors:

1. Simulation results are compared between starting water surface elevations at Pensacola Dam that vary by 23 vertical feet, with the maximum simulated water surface set to an elevation that is physically impossible for the Corps to maintain unless nature provides a constant, unceasing inflow of 600,000 cfs.
2. The Corps holds the elevation at Pensacola Dam steady while an incoming flood passes the Corps-monitored upstream United States Geological Survey (USGS) gages near Commerce and Miami (which are 68 and 58 miles upstream of the dam, respectively) and continue to hold the elevation steady until the incoming flood reaches Pensacola Dam.

Even in this compounded, fanciful scenario, the impact of nature is much greater than any imaginable impact of Corps-dictated operations. More specifically:

1. Along the Neosho River, in and around Miami, the impact of nature ranges from 3.8 to 261 times greater than the maximum simulated impact of GRDA's anticipated operational range.
2. Along the Spring River, the impact of nature ranges from 3.0 to 106 times greater than the maximum simulated impact of GRDA's anticipated operational range.
3. Along the Elk River, the impact of nature ranges from 2.0 to 16 times greater than the maximum simulated impact of GRDA's anticipated operational range.
4. Along Tar Creek, the impact of nature ranges from 4.0 to 219 times greater than the maximum simulated impact of GRDA's anticipated operational range.

Table 4. Summary of inundation areas for extreme, hypothetical starting elevations outside GRDA's anticipated operational range, for fictional scenarios in which the Corps fails to adhere to its Water Control Manual until the peak inflow reaches Pensacola Dam.

Warning! This table represents fictional scenarios in which the Corps fails to adhere to its Water Control Manual until the peak inflow reaches Pensacola Dam.				
Event(s)	Maximum Differences in Inundation Area (acres) for Extreme, Hypothetical Starting Elevations Outside GRDA's Anticipated Operational Range			
	Neosho River[a]	Spring River	Elk River	Tar Creek
Sep 1993 (21 year)	158	54	522	50
Jun 2004 (1 year)	773	1,885	1,471	262
Jul 2007 (4 year)	109	759	1,092	53
Oct 2009 (3 year)	295	378	940	80
Dec 2015 (15 year)	365	117	180	102
100-year	18	62	246	9
Impact of nature (historical events only)	2,945	5,693	2,960	1,055
Impact of nature (inc. 100-year event)	4,772	5,693	2,960	2,025
[a] In and around the City of Miami (RM 133 to 137).				

In all scenarios, the quantified results presented above show how Project operations have an immaterial impact on upstream inundation areas when compared to the impact of nature.

The City's analysis of historical gage data is fatally flawed.

In its comment, the City states:

> In addition to GRDA's new modeling results, the City also recently presented

> analysis of historical gage data showing a significant backwater effect in Miami as a function of Project operations. In sum, analysis by Tetra Tech of gage data from the Miami, Commerce, and Pensacola Dam gages shows that above flows of about 10,000 cfs, a change in water surface elevation at the dam drives a change of about 30 to 50% of that magnitude in water surface elevation in Miami, in contrast to the Commerce gage farther upstream, which experiences a much slighter impact (see figures below, reproduced from the City's Comments on GRDA's Draft License Application). The solid black best-fit lines (labeled "Actual Trend") show that dam operations have a large impact on water surface elevations in Miami (steep slope), but small impact on water surface elevations farther upstream at the Commerce Gage (nearly flat slope).
>
> All modeling aside, these data clearly show that the dam's *actual* operations have caused significant changes in water surface elevation in Miami. It defies credulity that the Project could significantly change the water surface elevation in Miami without also changing the distribution of the contaminated sediments carried by that same water.[4]

The City has already made this argument in a comment on GRDA's Draft License Application (DLA)[5] and GRDA has already debunked the City's flawed analysis in its Final License Application (FLA).[6] The City re-introduces its argument in part but not in whole, conveniently leaving out the most flawed underpinnings. Therefore, a detailed explanation, starting with the City's comment on the DLA, is required for a full understanding of the flawed nature of the City's argument and its mathematical indefensibility.

The City's analysis is presented in an appendix to their comments on GRDA's DLA.[7] GRDA includes copies of the City's Figures A1 and A2 herein for the purpose of explanation. Note that each of the City's figures actually contains two plots. For example, Figure A1 contains A1(a) on the left and A1(b) on the right.

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4 Miami Comments, Accession No. 20230814-5198, at 5-6 (emphasis in original).

5 Comments on Draft License Application at 6-8, Project No. 1494-438, Accession No. 20230330-5238 (filed Mar. 30, 2023) [hereinafter, Comments on DLA].

6 Final License Application, Project No. 1494-438, Accession No. 20230530-5192, Appendix X-1 at 32-35.

7 Miami Comments on DLA, Accession No. 20230330-5238, at 13-14.

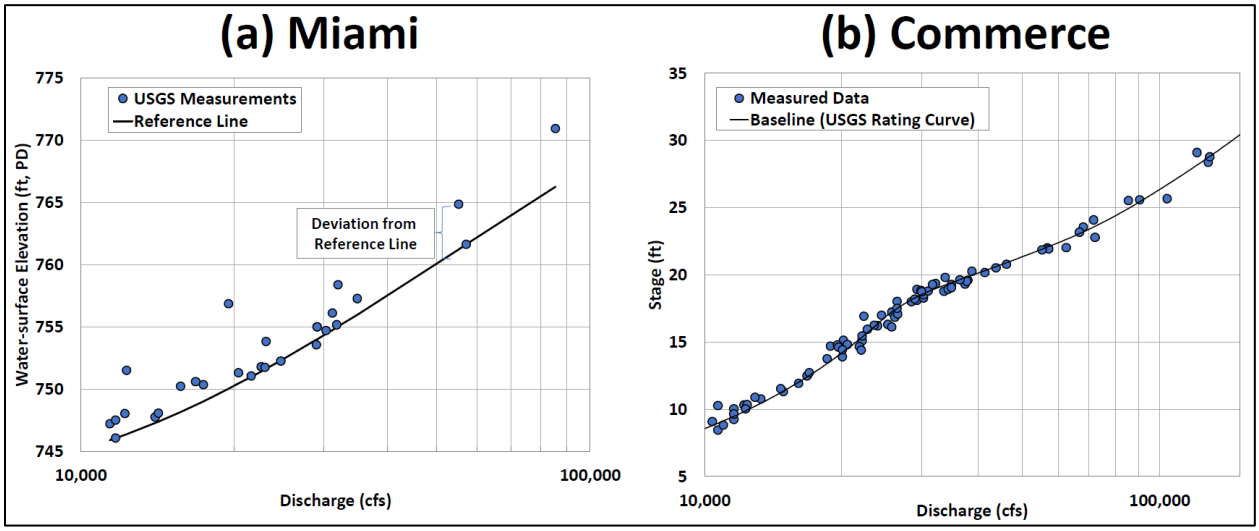

Figure A1 from the City of Miami's Comments on GRDA's DLA.[8]

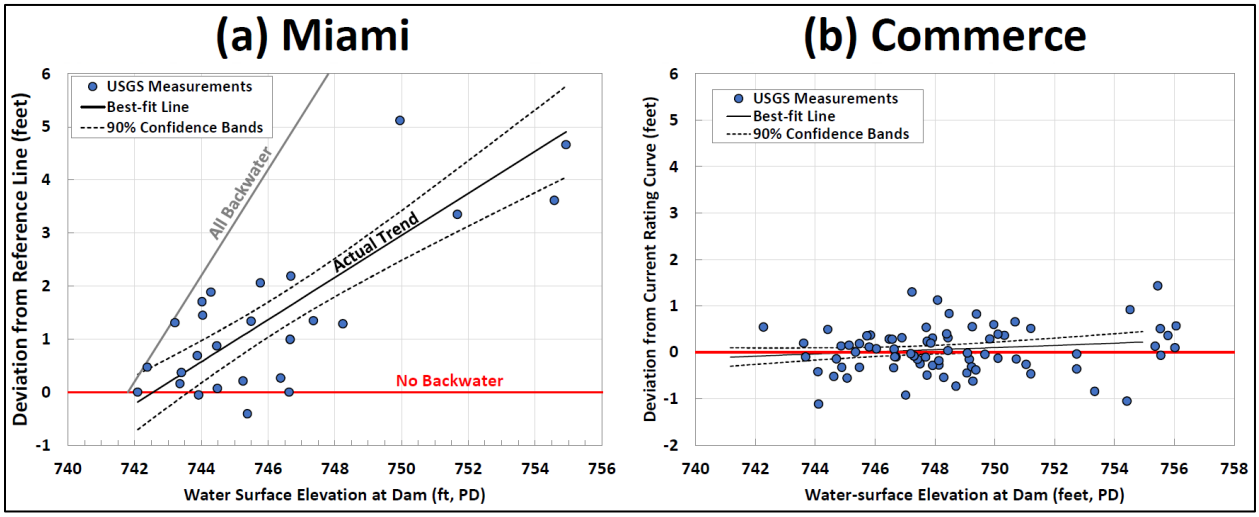

Figure A2 from the City of Miami's Comments on GRDA's DLA.[9]

Regarding Figure A1(a), the City admits that "a line was visually-fitted to the *lower bound* of the data site for the Miami gage."[10] There is no justifiable reason to create a biased, "visually-fitted" trendline. GRDA re-created the City's analysis and tried fitting various statistical trendlines to the publicly available USGS data used in the analysis; no statistical trendline matched the City's "visually-fitted' trendline. In Figure A1(a) of the City's filing, the "Reference Line" for the Miami gage is forced to fit the lower bound of USGS data, conspicuously ignoring USGS measurements that do not fit the City's pre-determined narrative. This is most apparent in the upper right corner of the plot, where the "visually-fitted" trendline misses the USGS measurement by 5 feet. A

8 *Id*. at 14.

9 *Id*.

10 *Id*. at 13 (emphasis added).

mathematical trendline would pass through (or at least extremely close to) the measurement that USGS conducted at high flow and high water surface elevation. The 5-foot offset between the City's "visually-fitted" trendline to the USGS measurement confirms that the City's analysis is founded on a predetermined bias.

To show the bias in the City's analysis, GRDA created **Figure 1**, below. The figure re-creates the City's Figure A1(a) with an important addition: a mathematically defensible, unmodified trendline, which was generated using a second order polynomial equation.

In **Figure 1**:

1. The USGS measurements are displayed as blue dots. GRDA used the same publicly available dataset the City used.
2. The City's biased, "visually-fitted" trendline is displayed as a black line.
3. The mathematically defensible, unmodified trendline is displayed as a green line.

The difference between the City's biased, "visually-fitted' trendline (black line) and the unmodified trendline (green line) is striking. Not only does the comparison show how the City's biased trendline was forced through the lower bound of the data while ignoring USGS measurements at high flows and high water surface elevations, the comparison also makes the *artistic* nature of the City's biased trendline more apparent.

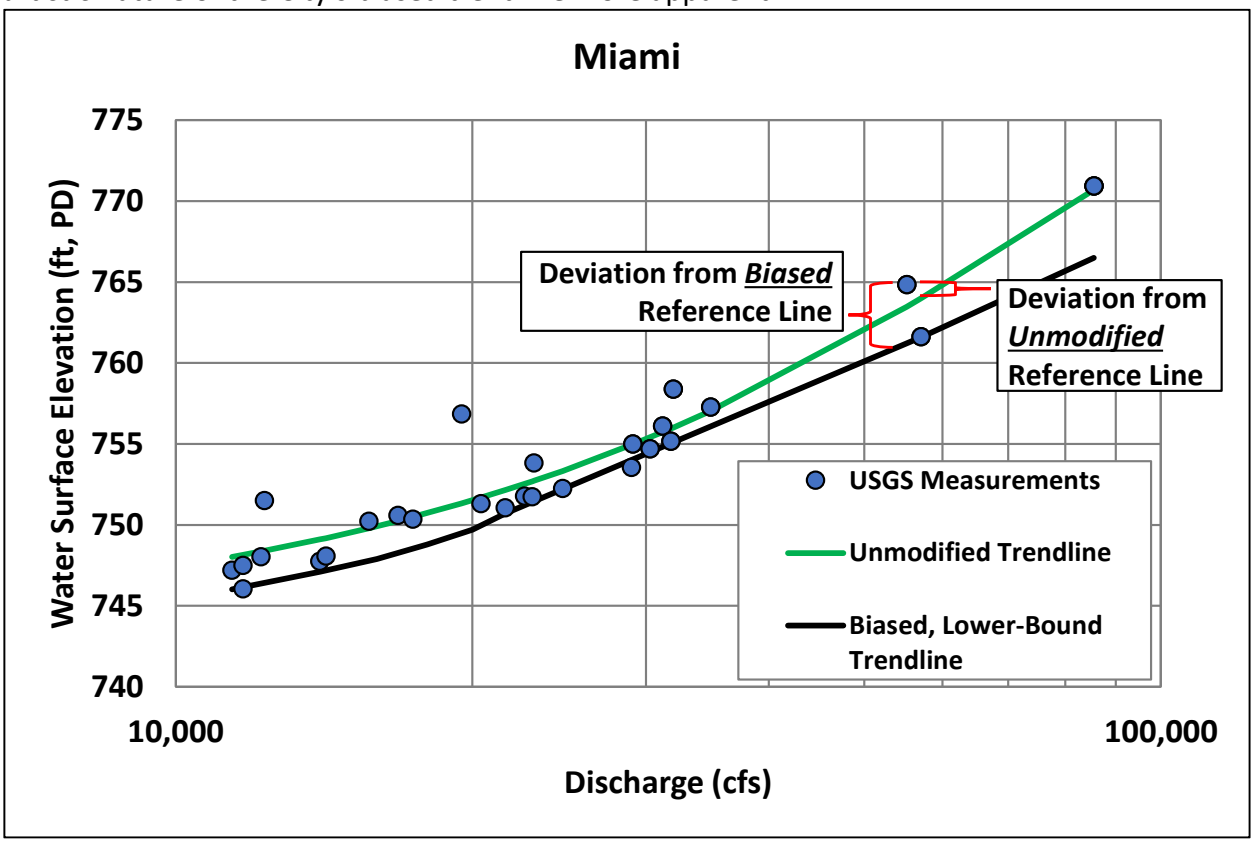

Figure 1. Re-creation of the City's Figure A1(a) with additional statistical information: a mathematically defensible, unmodified trendline.

The annotations in **Figure 1** also re-create the City's purported "Deviation from Reference Line" example and add a real, unbiased deviation example. The real deviation is miniscule in comparison to the biased deviation.

GRDA used calculated deviations from the unbiased, mathematically defensible trendline to re-create the remainder of the City's analysis at the Miami gage. The results are presented in **Figure 2** below, which re-creates the City's Figure A2(a).[11] After replacing the artistic, biased trendline with a mathematically defensible, second order polynomial trendline, there is no "obvious and strong trend in the Miami data" as purported by the City.[12]

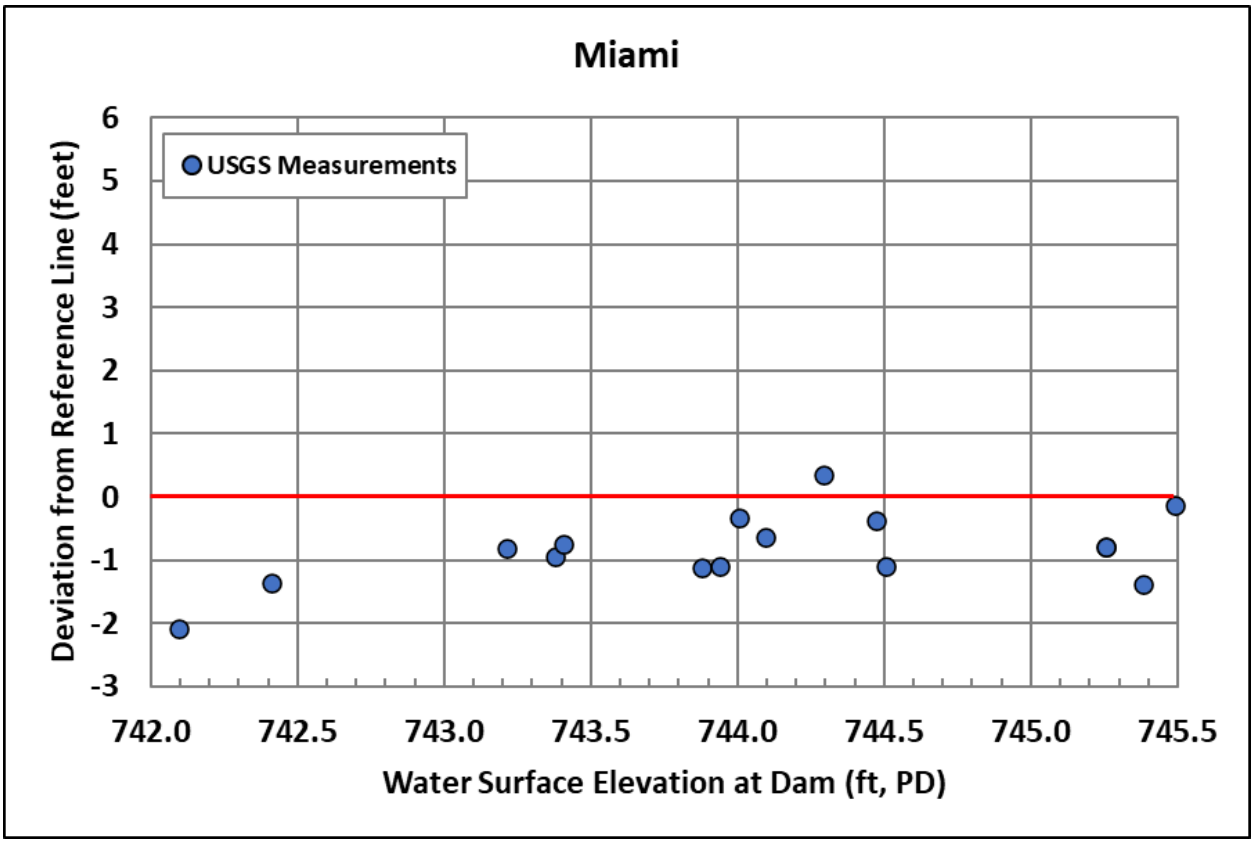

Figure 2. Re-creation of the City's Figure A2(a) with results from the mathematically defensible, unbiased analysis.

In summary, GRDA used the same publicly available USGS data to re-create the City's analysis. GRDA removed the admitted bias of the "visually-fitted' trendline and found that there is no trend showing a backwater effect at the City of Miami from GRDA's anticipated operational range.

[11] *Id*. at 14.

[12] *Id*. at 13.

The City's justification for a Contaminated Sediment Transport Study rests on the purported idea that Project operations impact water surface elevations in Miami. According to the City:

> It defies credulity that the Project could significantly change the water surface elevation in Miami without also changing the distribution of the contaminated sediments carried by that same water.[13]

Yet the publicly available USGS gage data does not, in fact, show a "change [in] the water surface elevation in Miami" as claimed by the City.

[13] Miami Comments, Accession No. 20230814-5198, at 5-6.

APPENDIX B

Proposed Desktop Study of Contaminated Sediment Transport

Pensacola Hydroelectric Project, FERC No. 1494

Study Plan

Desktop Study of Contaminated Sediment Transport

Prepared for

Prepared by

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September 2023

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1.0 INTRODUCTION

In 2018, Tetra Tech, Inc. (on behalf of the City of Miami, OK) submitted a study plan request to perform a contaminated sediment transport modeling study of the Grand Lake O' the Cherokees (Grand Lake) and four tributaries near the City of Miami (Neosho River, Spring River, Elk River, and Tar Creek) in support of relicensing the Pensacola Hydroelectric Project (Tetra Tech, 2018). The rationale behind the proposed contaminated sediment transport study was that the Tar Creek Superfund Site, located about 3.5 miles north of Miami, OK, has released heavy metals such as lead, zinc, and cadmium into Tar Creek, the Neosho River, and Spring River (Tetra Tech, 2018). The goals of their study plan were (Tetra Tech, 2018):

- Develop a comprehensive hydraulic model using existing and any required additional information to establish flood inundation areas in the upper reaches of Grand Lake and in the vicinity of the City of Miami.
- Specify toxins of concern and quantify toxicity of sediments from the Grand Lake tributaries of Tar Creek, Neosho River, and Spring River.
- Establish a baseline sediment transport model using existing and any required additional information.
- Estimate the change of toxic sediment deposition in the upper reaches of Grand Lake and in the vicinity of the City of Miami as a result of proposed operating scenarios.
- Estimate the future impacts of deposition of contaminated sediments near City of Miami and into Grand Lake over the duration of the license.

When Federal Energy Regulatory Commission (FERC or Commission) staff issued their Study Plan Determination for the relicensing of the Pensacola Hydroelectric Project (Project) in 2018, the contaminated sediment transport study was not approved because Tetra Tech and the City of Miami had not demonstrated a nexus between the Grand River Dam Authority's (GRDA) hydroelectric project operations and contaminated sediment transport and deposition (Mead and Hunt, 2023). FERC has deferred decision on this proposed study plan request two more times since the initial decision (Mead and Hunt, 2023).

GRDA completed detailed Hydrologic and Hydraulic (H&H) modeling and Sedimentation Studies to support the relicensing efforts. Both the H&H and sediment models have been thoroughly reviewed and scrutinized by FERC, the City of Miami, and other relicensing participants. The results of the Sedimentation Study provide the information necessary to analyze the direct, site-specific effects of Project operations on sedimentation, including the transport and subsequent deposition of potentially contaminated sediment.

In the Commission's Second Scoping Document 2 (Accession No. 20180427-3008) issued on April 27, 2018 (FERC, 2018), the Commission issued a list of environmental issues to be addressed in their environmental review to fulfill the Commission's obligations under the National Environmental Policy Act (NEPA). The list identified the need to analyze effects of Project operations on sedimentation, as well as cumulative effects related to the transport and subsequent deposition of potentially contaminated sediment. Although the FERC-approved Sedimentation Study was developed and implemented to address the direct, site-specific effects of sedimentation, the Sedimentation Study does not address cumulative effects of sediment

transport. According to the Council on Environmental Quality's regulations for implementing NEPA under 40 CFR 1508.1(g)(3), cumulative effects are “effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.”

Although it is a long-standing Commission practice to not require license applicants to complete specific studies to fulfill the Commission’s obligations under NEPA to analyze cumulative effects, GRDA proposes this desktop study of contaminated sediment transport to assist the Commission with fulfilling its cumulative effects analysis relating to transport and subsequent deposition of potentially contaminated sediment.

2.0 STUDY PLAN ELEMENTS

2.1 Study Goals and Objectives

To date, no comprehensive documentation of contaminated sediment data and relevant information has been compiled from the wide variety of sources which would facilitate development of an understanding of this issue. Thus, the goal of the desktop study of contaminated sediment transport is to compile and analyze previous reports, studies, reported data, and modeling related to contaminated sediment transport, focusing on heavy metals. The information obtained from this desktop study may assist the Commission in preparing a cumulative effects analysis relating to contaminated sediment transport. The study objectives are as follows:

- Perform a detailed review of previous reports, studies, reported data, and modeling efforts regarding contaminated sediment transport in the Project area.
- Summarize the information in a form that addresses contaminated sediment transport and fate in the Project area.

2.2 Management Goals

The results of the review of existing contaminated sediment information may assist the Commission with completing its cumulative effects analysis relating to sedimentation, including the transport and subsequent deposition of potentially contaminated sediment, in the Project area.

2.3 Public Interest

The City of Miami and other relicensing participants have explained their interest in the information that will result from this desktop study, and this study plan will seek their input and comments on the study report.

2.4 Background and Existing Information

Grand Lake is located on the Neosho River, downstream of the Tri-State Mining District. The general area, including upland areas and upstream reaches of tributaries to the Neosho River,

has been the subject of multiple investigations by Federal and State agencies and others due to historical mining operations, the presence of mining waste (chat), and the use of chat in road construction and fill material in the region. Mining for lead and zinc commenced around 1900 and continued into the 1960s in an area called the Tri-State Mining District in northeast Oklahoma, southeast Kansas, and southwestern Missouri. The Tar Creek Superfund Site is part of the Tri-State Mining District and is located on Tar Creek which flows into the Neosho River upstream of Grand Lake. Lead and zinc from the Tar Creek Superfund Site were used to make bullets for both World Wars.

The existing information for the area is extensive. The United States Environmental Protection Agency (EPA), the Oklahoma Department of Environmental Quality, and various tribes such as the Quapaw Nation have been collecting data on the site and the region for decades. Academic studies have also evaluated metal concentrations in the region. Much of this information is publicly available on websites maintained by the agencies or in published papers. In addition, GRDA has conducted H&H modeling and Sedimentation Studies to understand and describe water levels and sediment transport within the study area. The desktop study will also examine studies and data that were collected outside of the study area to confirm findings in the study area and fill in potential gaps of existing studies or data in the study area. The desktop study focusing on areas outside the study area is not meant to be an exhaustive review but will supplement the information gathered within the study area.

Together, these data sources will allow an evaluation of the spatial distribution of metals in upstream/upland areas, riverine areas (both river channel and floodplain), and Grand Lake. These data will also help to describe the key transport pathways for contaminated sediment such as anthropogenic placement of chat, surface water, groundwater, wind, and sediment transport.

2.5 Project Nexus

The previous studies completed as part of this relicensing effort do not identify a direct, site-specific nexus to the effects of Project operations on sedimentation, including the transport and subsequent deposition of potentially contaminated sediment. Nevertheless, concerns have been raised regarding the transport and deposition of contaminated sediment within the Project area. The proposed work would address these concerns.

2.6 Study Area

As defined by the Scoping Document 2 (FERC, 2018), the study area is the Grand River Basin, which extends approximately 66 miles upstream from Pensacola Dam. The study area encompasses the lower reaches of the Neosho, Spring, and Elk rivers where interactions between the reservoir and tributaries are likely greatest. Tributaries upstream of Grand Lake, including Tar Creek, flow from the Tri-State Mining District. The desktop study also may include relevant studies outside this immediate area.

2.7 Methodology

The existing information review will be conducted in the following steps:

1. Identify existing studies regarding contaminated sediment transport in the study area, including the Tri-State Mining District located upstream of the Neosho River and Grand Lake, recognizing that an EPA Comprehensive Environmental Response, Compensation,

and Liability Act (CERCLA) Remedial Investigation and Feasibility Study (RI/FS) is being conducted for that area. Once relevant and applicable studies are identified, reports that present the associated data and document the study findings for each will be requested and obtained (either through public sources or via request from study authors or sponsors).

2. In a similar manner, identify relevant existing studies outside the study area that would supplement the identified studies from within the study area.
3. Solicit relevant studies, data, and models from the various relicensing participants. GRDA will review the information provided by the relicensing participants for potential inclusion in the desktop study.
4. Review the documents obtained and compile salient information based on the reported data, focusing on concentrations of heavy metals in river and lake sediment, riverbank soil, floodplain soil, and surface water and concentrations and transport of contaminated sediment in the streams and rivers. Topics to which this compilation will be focused include but are not limited to:
    a. Spatial distribution patterns for heavy metals in sediments (creek, rivers, lake) and adjacent upland soil areas (bank and floodplain soil), including spatial patterns longitudinally along the creek, rivers, and lake (i.e., upstream to downstream), laterally away from banks and into the upland (i.e., with elevation), and with depth in sediments (to the extent such data exist).
    b. Concentrations and mass loadings of heavy metals and suspended sediment in surface water, including an evaluation of differences between concentrations and loadings under low and baseflow conditions versus storm events of various magnitude.
    c. Evaluations of sediment and heavy metal mass loadings entering the surface water bodies (creek, rivers, lake) from various pathways to the extent calculations or quantitative estimates of such loadings have been made (or data available to do so exist).
5. Evaluate the compiled information and, in conjunction with the results of GRDA's H&H modeling and Sedimentation Studies, qualitatively describe the sources, transport, and fate of contaminated sediment within the study area.
6. Write a draft report to document the existing information review. The report will summarize the methodology, information and data compiled, observations and conclusions drawn from the information reviewed. The report will also include a reference section that includes full citations (and download links if available) for the documents reviewed.
7. Provide the draft report to the various relicensing participants for their review and comment. GRDA will formally respond to the relicensing participants' comments before finalizing the report.

2.8 Consistency with Generally Accepted Scientific Practice

The desktop study follows generally accepted scientific practice regarding these types of desktop studies.

2.9 Schedule

The schedule will adhere to the Proposed Alternative schedule in Section II of GRDA's response letter, filed simultaneously with this study plan on September 5, 2023.

2.10 Level of Effort and Cost

The estimated cost for completion of the desktop study of contaminated sediment transport is approximately $100,000.

3.0 REFERENCES

FERC. (2018). *Scoping Document 2 for the Pensacola Hydroelectric Project, Project No. 1494-438, Accession No. 20180427-3008.* Washington DC: Federal Energy Regulatory Commission.

Mead and Hunt. (2023). *Response to Requests for Contaminated Sediment Transport Study for Relicensing of the Pensacola Hydroelectric Project (FERC No. 1494).* Sallisaw, OK: Grand River Dam Authority.

Tetra Tech. (2018). *Study Plan Request for Contaminated Sediment Transport Study.* Atlanta, GA: Pensacola Hydropower Project FERC Project No. 1494-438.